

What is claimed is:

1. An interactive digital music device providing multiple features for a user, comprising
- 5 programmable memory for storing digital audio and voice samples,
receivers for obtaining external sound signals,
means for playing said stored audio and voice samples and external sound signals,
means for storing automatic musical composition instructions, whereby the user is able to
create unique musical compositions, and
- 10 means for mixing external sound signals with said unique musical compositions and
stored audio and voice samples to provide altered audio and voice presentations.
2. The interactive digital music device of claim 1, comprising
means for providing visual effects complementing said altered audio and voice
presentations.
- 15 3. The interactive digital music device of claim 2, wherein said means for providing
visual effects, comprises
visual means for providing written song lyrics.
4. The interactive digital music device of claim 2, wherein said means for providing
visual effects, comprises
- 20 visual means for providing complimentary light patterns for said altered audio and voice
presentations.
5. The interactive digital music device of claim 1, wherein said programmable
memory comprises

flash memory, and wherein said received radio signals, unique musical compositions and altered audio and voice presentations are digitized.

6. The interactive digital music device of claim 1, comprising a television signal interface.

7. An Automatic Composer in a digital multi-media device for composing a musical piece according to automatic composition instructions and for mixing sound samples into it, comprising

a processor having an input and an output, said processor operating to implement the automatic composition instructions,

a memory for storing a music database for use in accordance with the automatic composition instructions,

a second memory for storing the sound samples, said first and second memories being connected to the processor input, a music synthesizer connected to the processor output for control by said processor and providing a synthesizer output, and

a summation and digital to analog conversion circuit for receiving processor and synthesizer outputs and for providing a summed analog output.

8. The Automatic Composer as set forth in claim 7, wherein said summation and digital to analog conversion circuit, comprises

a digital to analog converter for receiving said synthesizer and processor outputs and for providing analog signals, and second a summation circuit for receiving said analog signals.

9. The Automatic Composer as set forth in claim 7, wherein said summation and digital to analog circuit comprises a digital adder for summing the processor and synthesizer outputs and for providing a summed digital output, and a digital to analog converter for receiving said summed digital output.

10. The Automatic Composer as set forth in claim 9, wherein said processor comprises an internal digital adder.

11. The Automatic Composer as set forth in claim 9, wherein said synthesizer comprises an internal digital adder.

12. The Automatic Composer as set forth in claim 7, wherein said synthesizer comprises an additional processor for directly accessing said memory for storing sound samples, and wherein said synthesizer comprises means for handling sound samples as a special case of basic instrumental sounds.

5 13. The Automatic Composer as set forth in claim 7, comprising a microphone for recording external sound samples, and means for starting and stopping recording.

14. The Automatic Composer as set forth in claim 13, further comprising means for automatically eliminating the silent periods that precede and follow a useful portion of a recording, and means for implementing a speech compression algorithm to compress the useful
10 portion of the recording.

15 15. The Automatic Composer as set forth in claim 7, wherein said processor comprises
means for integrating said sound samples into musical compositions,
means for functioning to select said sound samples according to a pseudo-random
sequence,
means for directing said sample to be played at a predetermined time between the
beginning and the end of a musical bar as governed by certain musical rules,
means for directing any portion of the sound sample to be played from its entirety to any
part thereof, and
20 means for optionally selecting repetition of the sound sample.

16. The Automatic Composer as set forth in claim 7, wherein said processor comprises means for imparting special effects to the musical piece, whereby the musical piece is optionally modified with any ones of echo, vibrato, distortion, frequency modulation, and filtering effects.

25 17. The Automatic Composer as set forth in claim 7, wherein said processor comprises
a clock operating at 25 MHz maximum, and wherein said first memory and said second
memory comprise
a memory having a capacity of 2 MB maximum.

18. An Automatic Soundtrack Generator in a digital multi-media device that is capable of mixing a signal from an external audio source in a video/audio record and/or play device with an internal audio source containing digitized sound files in accordance with predetermined mixing instructions, comprising

5 a processor,
a memory element connected to said processor for storing mixing the instructions and the digitized sound files,
a digital to analog conversion circuit for receiving the digitized sound files, and
a summation circuit for combining the signal from the external audio source with the
10 digitized sound files.

19. The Automatic Soundtrack Generator as set forth in claim 18, further comprising
a digital musical synthesizer, and
a store of pre-recorded and automatically composed MIDI files, wherein selected ones of
said store of MIDI files are connected to said digital musical synthesizer for providing the
15 internal audio source.

20. The Automatic Soundtrack Generator as in claim 18, further comprising
a user accessible input, and
means for selecting the internal audio source connected to the user accessible input and
defined by the user.

21. The Automatic Soundtrack Generator as defined in claim 18, further comprising
an additional memory means containing preprogrammed instructions for defining the
internal audio source, and
means for selecting the internal audio source connected to said additional memory means.

22. The Automatic Soundtrack Generator as set forth in claim 18, comprising
25 means for selecting the internal audio source at video/audio record time.

23. The Automatic Soundtrack Generator as set forth in claim 18, comprising
means for selecting the internal audio source when playing a previously recorded
video/audio sequence.

24. A Virtual Radio in a digital multi-media device that is capable of selecting,
30 according to given criteria, musical files from predetermined sound sources for playing from a
speaker, comprising

a processor providing a digital output,
a memory element connected to said processor for storing the given criteria and the
predetermined sources of musical files, and
a summation and digital to analog conversion circuit connected to receive said digital
5 output and providing a predetermined analog sound output.

25. The Virtual Radio device as set forth in claim 24, further comprising
a digital musical synthesizer for adding MIDI files that are pre-recorded or composed
automatically, according to the given criteria, to the predetermined sound sources.

26. The Virtual Radio device as set forth in claim 24, comprising
10 a radio receiver providing a sound output used as an additional selectable sound source.

27. The Virtual Radio device as set forth in claim 26, comprising means for providing
voice files within the predetermined sound sources for combination with said radio receiver
sound output.

28. The Virtual Radio device as set forth in claim 24, wherein sound samples are pre-
15 recorded in the predetermined sound sources by a user, comprising means for mixing speech
sound with the musical files.

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